

Analyzing France Car Market with a CO₂ emission perspective.

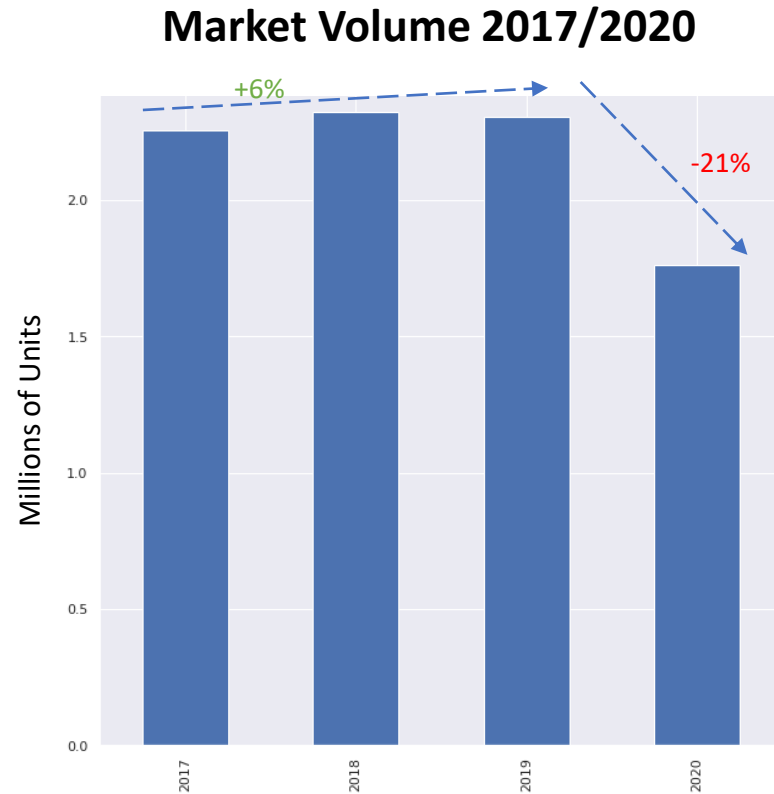
Business Analytics ESSEC
ACCENTURE



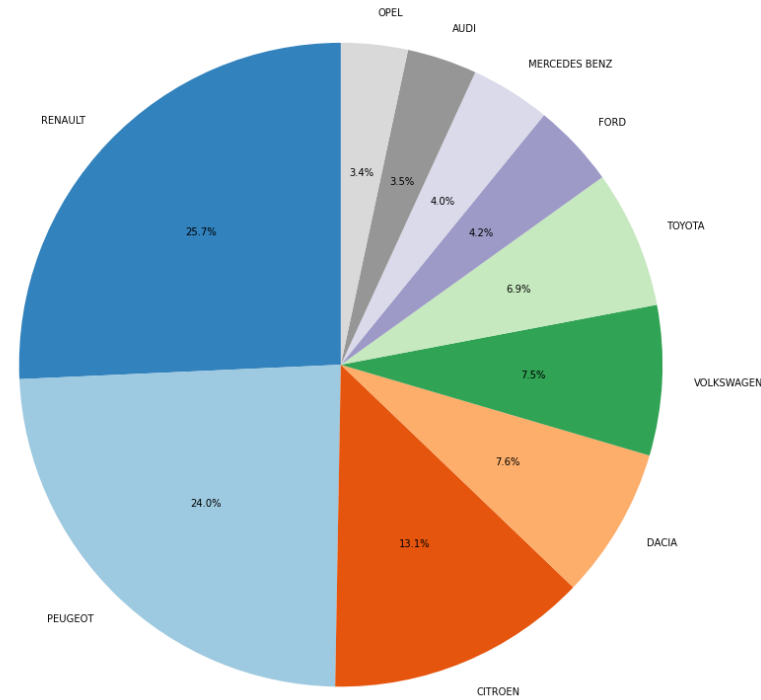
Motivation

- › France car sales reached +2.3 Million of Cars during the last years.
- › France has remarkable car manufacturers, such as Peugeot, Citroen, and Renault.
- › During 2020, due to the COVID crisis the market has dropped by 21%
- › Worldwide, since 1990, the Transport sector has kept increasing its Co2 emissions.
- › Over the Transport Sector, cars represent 43% of the total Co2 emissions of the sector.
- › The European Commission has mandated the car manufacturers to be more efficient on the Co2 Consumption.
- › To measure this consumption, a standard cycle was created, which represents a regular driving cycle under classical European roads. The consumption per kilometer under this cycle is known as NEDC gr/km (New European Driving Cycle).
- › **How is the French Market reacting to this new imposition of the European Union?**
This is the objective of this job.

Market Overview: Top 5 Players represents 75% of the market



2020 Market Share French Market

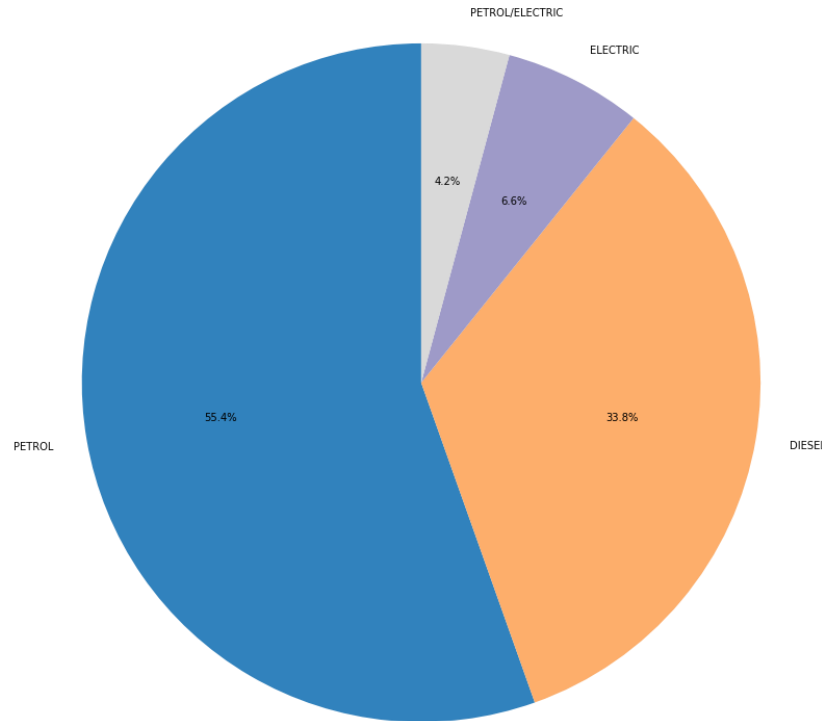


Key Concepts:

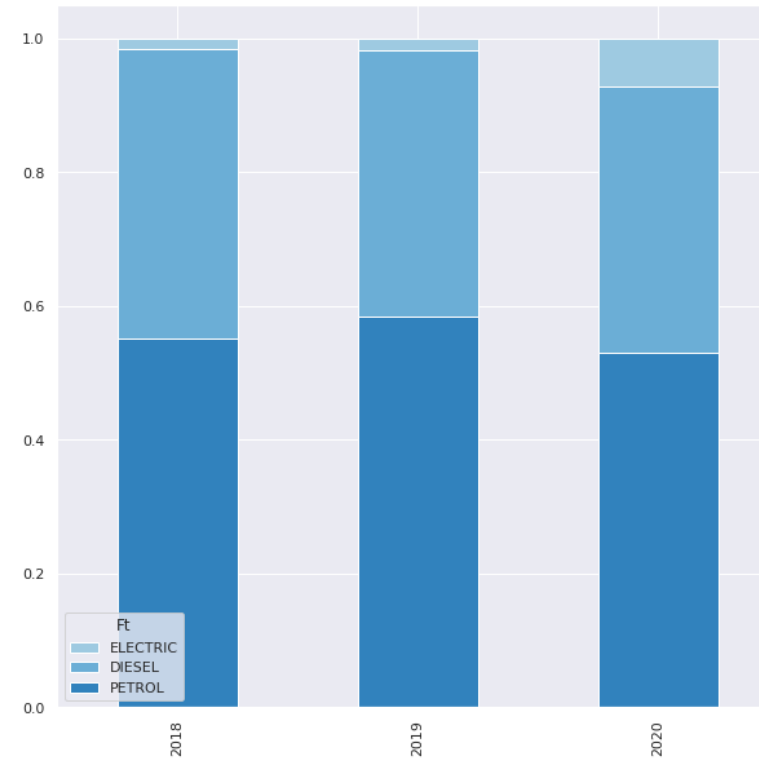
- The industry has been quite steady until the COVID crisis, which affected the industry greatly by a 21% drop in sales.
- The top 3 players in the France Market are French Brands: Renault, Peugeot, and Citroen. Adding Dacia and Volkswagen represents +75% of the market.

Source Distribution: Petrol is the King, but Electric is in rampage.

Energy Source Distribution 2020



Petrol/Diesel/Electric 2018-2020



Key Concepts:

- Petrol represent +50% of the market and Diesel 33.8%, this is one the worst efficient on the usage of the CO2 (to be seen in the following slides), which should be a concern.
- Electrical cars has entered to the market with great strenght, growing for a 1% of Market share to 7%. (700% of growing!)

Average CO2 Emission Efficiency by Car Manufacturer

(g/km, volume
weighed, 2020)

| | | |
|------------------|--------|------------------------|
| TESLA | - | Very Low (< 1 g/Km) |
| AIWAYS | - | 6.5% |
| MG | 0.20 | |
| SMART | 0.27 | |
| BMW I | 0.91 | |
| MITSUBISHI | 75.79 | |
| DS | 81.32 | Low (< 100 g/Km) |
| PEUGEOT | 92.01 | |
| HYUNDAI | 92.46 | |
| TOYOTA | 92.73 | |
| OPEL | 94.56 | |
| RENAULT | 94.69 | |
| KIA | 94.87 | |
| VOLVO | 95.01 | |
| MINI | 98.53 | |
| CITROEN | 99.15 | |
| HONDA | 99.49 | Medium (< 130 g/Km) |
| NISSAN | 100.31 | |
| SUZUKI | 100.80 | |
| FORD | 101.40 | |
| FORD-CNG-TECHNIK | 103.45 | |
| VOLKSWAGEN | 103.86 | |
| MERCEDES BENZ | 107.84 | |
| FIAT | 107.94 | |
| SEAT | 108.65 | |
| LEXUS | 109.22 | |
| SKODA | 109.96 | 52.3% |
| BMW | 110.66 | |
| DACIA | 111.79 | |
| MAZDA | 113.69 | |
| AUDI | 115.43 | |
| JEEP | 116.19 | |
| PORSCHE | 120.58 | |
| LAND ROVER | 124.70 | |
| MPM MOTORS | 137.00 | |
| JAGUAR | 137.05 | High (< 160 g/Km) |
| ALFA ROMEO | 139.33 | |
| SSANGYONG | 143.56 | |
| ALPINE | 147.86 | |
| PÖSSL | 151.24 | |
| SUBARU | 152.94 | |
| CUPRA | 155.83 | |
| CATERHAM | 167.60 | |
| MORGAN | 172.67 | |
| LOTUS | 202.50 | Very High (> 160 g/Km) |
| ALPINA | 208.80 | |
| MERCEDES AMG | 242.89 | |
| BENTLEY | 246.95 | |
| MASERATI | 248.89 | |
| MC LAREN | 261.14 | |
| ASTON MARTIN | 261.25 | |
| FERRARI | 285.42 | |
| LAMBORGHINI | 330.11 | |
| ROLLS ROYCE | 351.11 | |

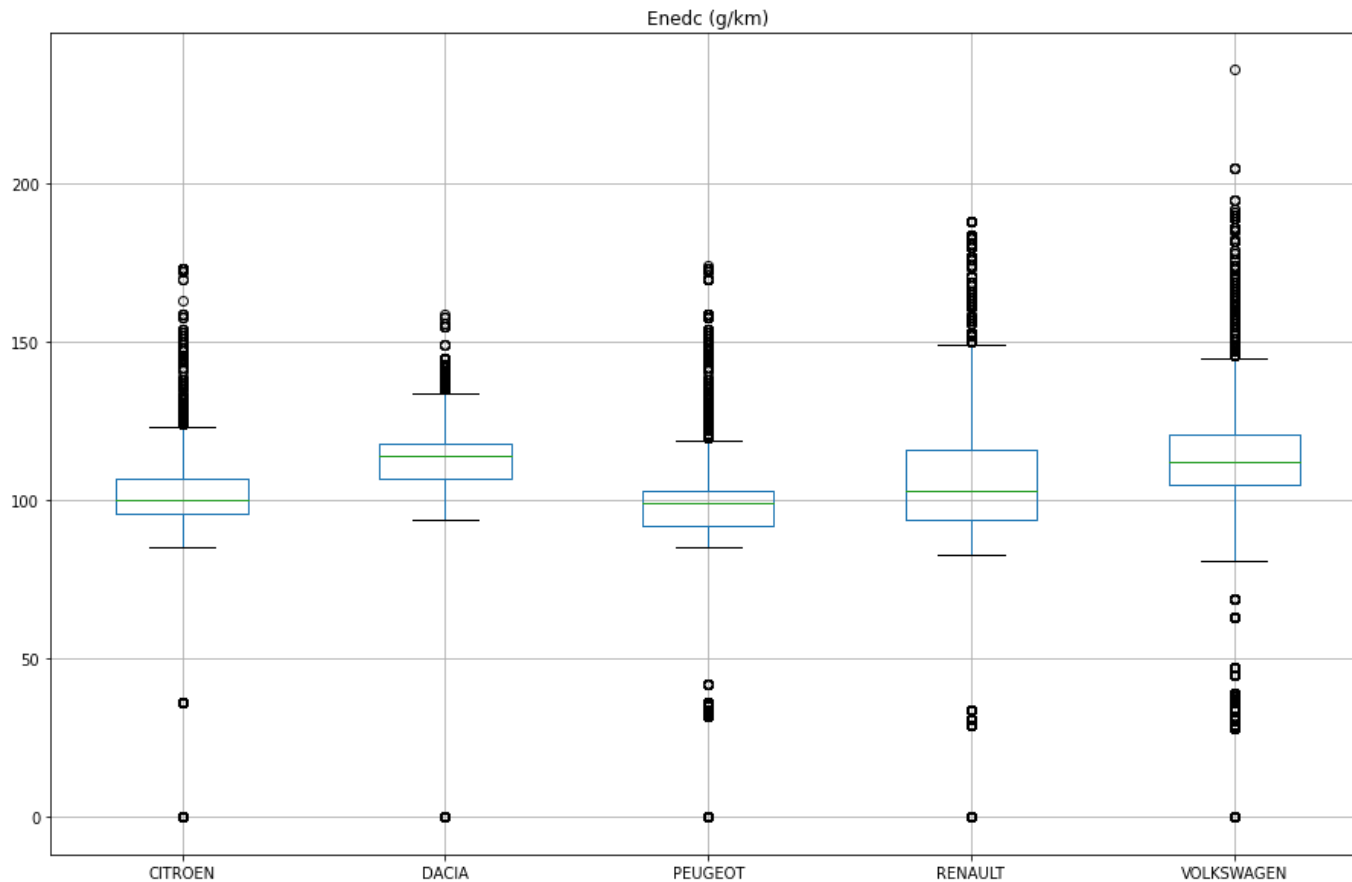
41%

6%

Key Concepts:

- In the Very Low segment, there are remarkable electrical car. Or brands who were been transitioned heavily into this segment.
- From the top 5, French brands are in the Low segment.
- The other 2 players, are on the medium segment. Whose emission are +10% than the previous segment.
- In the very high segment, there are luxury brands, such as Ferrari/Lamborghini/etc.

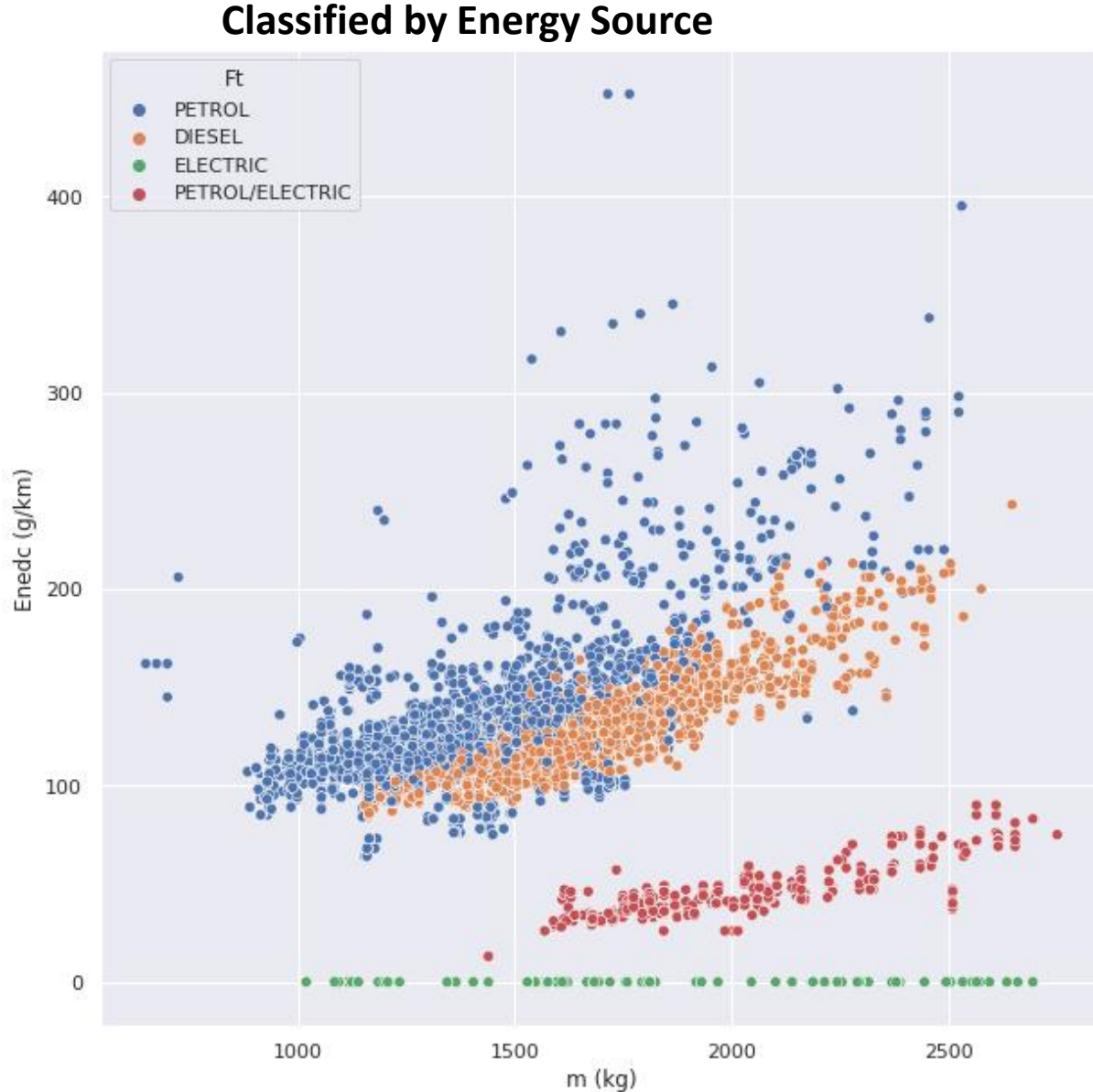
Distribution of Emission by Car Manufacturer (Top 5 2020)



Key Concepts:

- All brands has outliers with zero emission, which represents their electrical models.
- As an average, Peugeot is the most efficient one.
- Even though there is not quite difference between the median, the dispersion of each brands is considerable. Volkswagen has the greatest dispersion.
- Peugeot has the lowest percentile 75%.

Efficiency: Emissions vs Weight

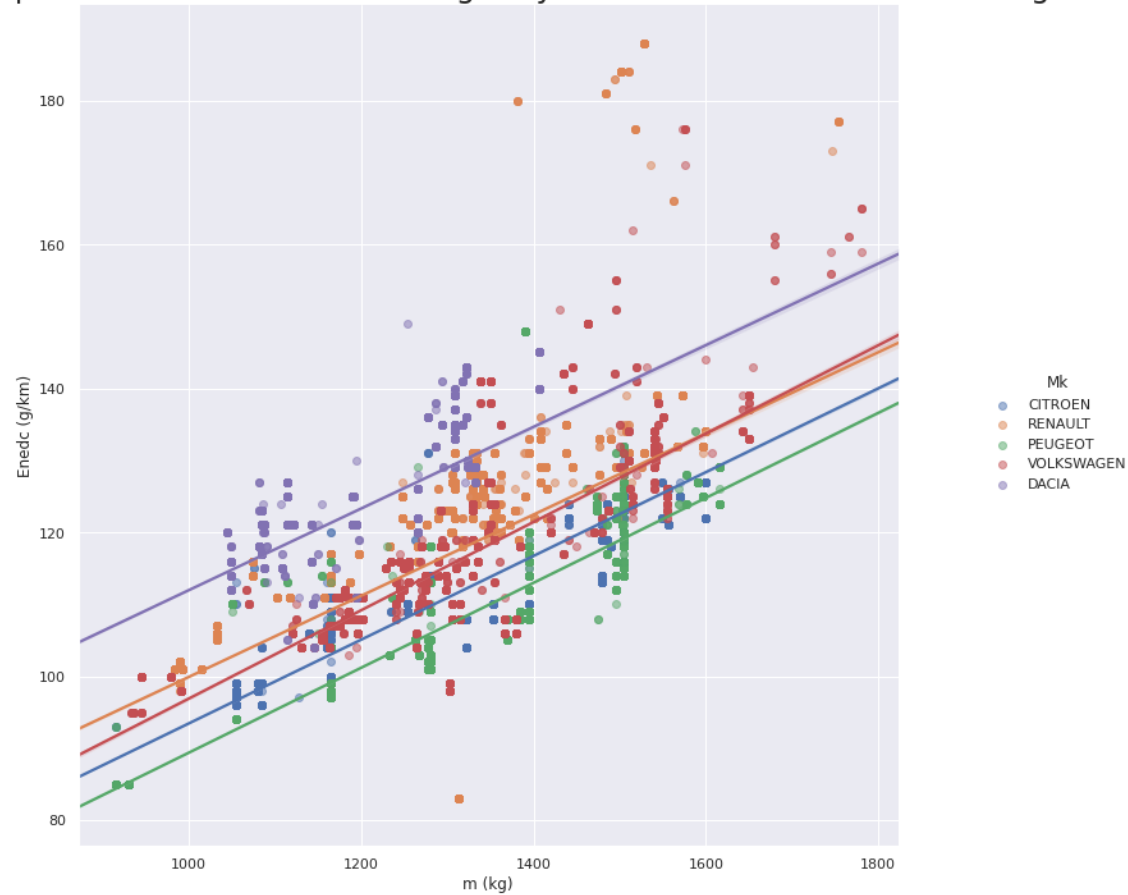


Key Concepts:

- Except by the electrical, there is a positive correlation between the emissions and the weight of the car.
- This correlation is lowest in the Petrol/electric.
- This correlation is highest in the Petrol.
- How these correlations behave by brands?

Efficiency: Emissions vs Weight

Relationship between Emission and Weight by Car Manufacturer - PETROL Segment



Key Concepts:

- For the Petrol Segment, all the slopes are quite the same, except Volkswagen which is greater than the others.
- The difference is on the intercept, which can mean as a “base emission”. Where Peugeot has the lowest and Citroen the Highest.

Efficiency: Emissions vs Weight

Relationship between Emission and Weight by Car Manufacturer - DIESEL Segment

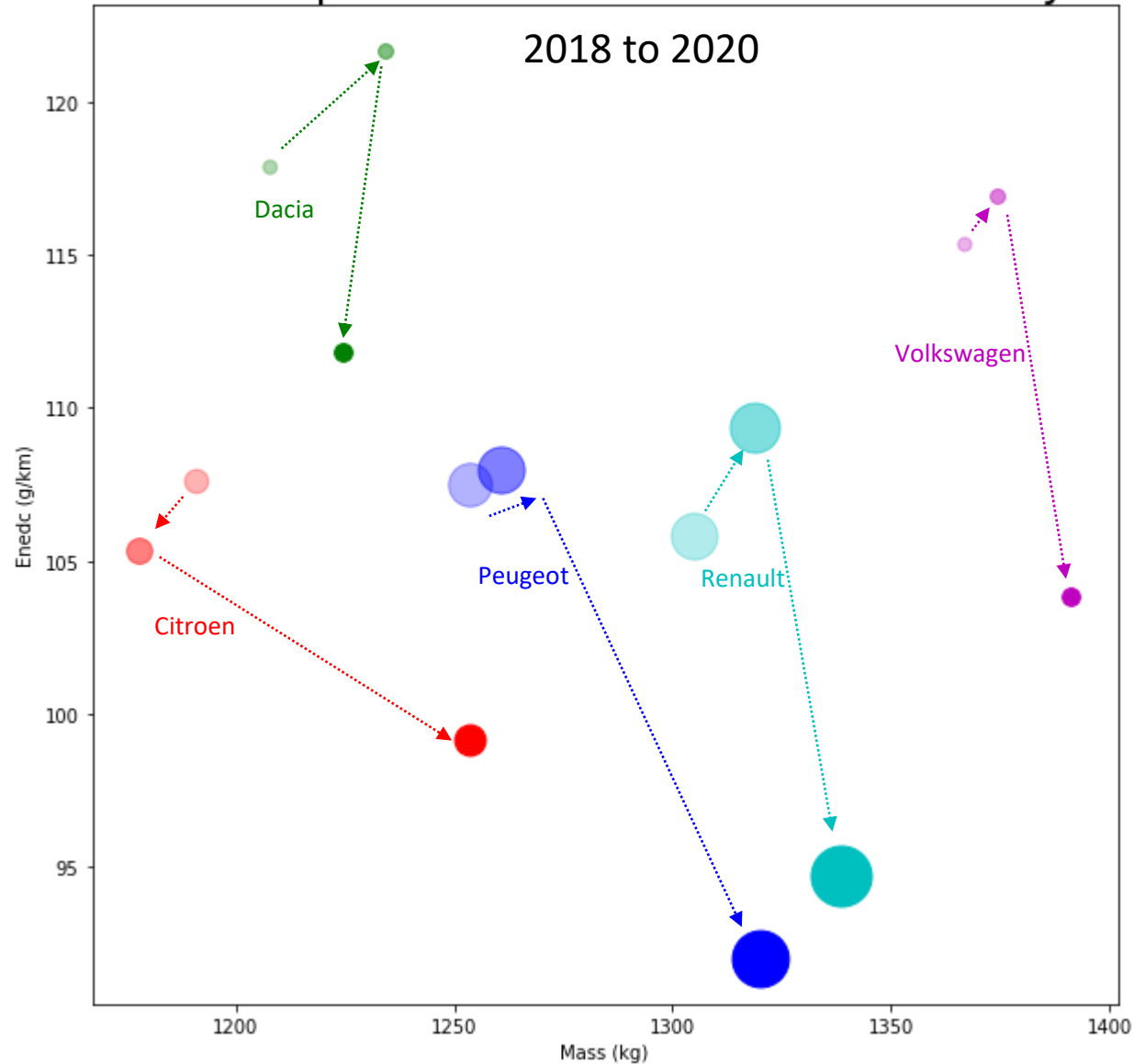


Key Concepts:

- For the Diesel Segment, the slopes of Renault and Volkswagen are the highest.
- Citroen and Peugeot has the lowest line, which means that they can produce heavy cars with less emissions.

Efficiency: Emissions vs Weight

Transition of Top 5 Car Manufacturer of Efficiency of Co2



Key Concepts:

- All the brands has evolved to be more efficient on the ENEDC emissions.
- Meanwhile French brands are increasing mass but with more efficiency, Dacia is increasing efficiency with less weight cars.
- Remarkable is the shift of Citroen to heavy and efficient cars. Meanwhile Peugeot and Renault has broken the tendency of increasing the emissions.

Conclusions

- › Even though Electrical cars are gaining trend, the market is still wide represented by Diesel and Petrol cars.
- › 40% of the models sold during 2020, are classified under Low or Very Low Emissions.
- › Seeing the percentile 75. Citroen and Peugeot has the most efficient cars.
- › There are difference between energy source and brands over the relationship between weight and efficiency of CO₂.
- › French brands have demonstrated a decrease over the efficiency measure of emissions, together with an increase of the weight. Which may represent a new way of producing cars.